

What is claimed is

1. A package structure for a light emitting diode, comprising:
 - a conduction board having a first portion and a second portion;
 - a conductive layer having an opening;
 - an insulation layer, disposed between said conduction board and said conductive layer, for electrically insulating said conduction board from said conductive layer and electrically insulating said first portion from said second portion of said conduction board;
 - a connection layer, embedded into said insulation layer through said opening, for supporting and electrically connecting said light emitting diode, said connection layer electrically coupling with said first portion of said conduction board and being electrically insulated from at least one portion of said conductive layer; and
 - a passage for electrically coupling said at least one portion of said conductive layer with said second portion of said conduction board.
2. The package structure of claim 1, wherein said insulation layer comprises an isolation layer and an insulation channel, said isolation layer insulates said conduction board from said conductive layer, and said insulation channel insulates said first portion from said second portion of said conduction board.
3. The package structure of claim 1, comprising a channel for insulating said connection layer from said at least one portion of said conductive layer.
4. The package structure of claim 3, wherein said channel insulates said connection layer from two portions of said conductive layer.
5. The package structure of claim 4, wherein said insulation layer comprises an isolation layer and an insulation channel, said isolation layer insulates said conduction board from said conductive layer, said insulation channel insulates said first portion, said

second portion, and a third portion of said conduction board from each other, and said second portion and said third portion correspond to said two portions of said conductive layer respectively.

6. The package structure of claim 1, wherein said conduction board is a metal board having material selected from a group consisting of copper, aluminum, and the combination thereof for dissipating heat generated by said light emitting diode, and said metal board has a thickness larger than about 1 mm.
7. The package structure of claim 1, wherein said insulation layer comprises an insulating adhesive layer including epoxy or Teflon.
8. The package structure of claim 1, wherein said conductive layer is a copper layer having a thickness in a range of about 0.1 to several mils or above.
9. The package structure of claim 1, wherein said connection layer has a reflection surface of silver for reflecting lights emitted from said light emitting diode.
10. The package structure of claim 1, wherein said connection layer has a slanted cup-like reflection surface.
11. The package structure of claim 1, wherein said connection layer is selected from a group consisting of copper, nickel, silver, gold, and the combination thereof.
12. The package structure of claim 1, wherein said passage comprises a hole penetrating through said conductive layer, said insulation layer, and said conduction board, and said hole defines an inner surface coated with a conductive material.
13. The package structure of claim 12, wherein said conductive material is selected from a group consisting of copper, nickel, silver, gold, and the combination thereof.
14. A light emitting device, comprising:
 - a conduction board having a first portion and a second portion;

a conductive layer having an opening to expose a portion of said conduction board;

an insulation layer, disposed between said conduction board and said conductive layer, for electrically insulating said conduction board from said conductive layer and electrically insulating said first portion from said second portion of said conduction board;

a light emitting diode having a first electrode and a second electrode disposed on said exposed portion of said conduction board, said first electrode and said second electrode respectively coupling to said first portion and said second portion of said conduction board via said exposed portion of said conduction board; and

two passages for respectively electrically coupling said conductive layer with said first portion and said second portion of said conduction board.

15. The light emitting device of claim 14, wherein said insulation layer comprises an isolation layer and an insulation channel, said isolation layer insulates said conduction board from said conductive layer, and said insulation channel insulates said first portion from said second portion of said conduction board.
16. The light emitting device of claim 14, comprising a channel for dividing said conductive layer into a first isolation portion and a second isolation portion respectively corresponding to said first portion and said second portion of said conduction board.
17. The light emitting device of claim 14, wherein said conduction board is a metal board having material selected from a group consisting of copper, aluminum, and the combination thereof for dissipating heat generated by said light emitting diode, and said metal board has a thickness larger than about 1 mm.
18. The light emitting device of claim 14, wherein said insulation layer comprises an

insulating adhesive layer including epoxy or Teflon.

19. The light emitting device of claim 14, wherein said conductive layer is a copper layer having a thickness in a range of about 0.1 to several mils or above.
20. A light emitting device, comprising:
 - a light emitting diode having a first electrode and a second electrode;
 - a substrate sequentially having a conduction board, an insulation layer, and a conductive layer, said conduction board having a first portion and a second portion, said insulation layer for electrically insulating said conduction board from said conductive layer and electrically insulating said first portion from said second portion of said conduction board;
 - a connection layer, embedded into said insulation layer from said conductive layer, for supporting and electrically connecting said light emitting diode, said connection layer electrically coupling with said conduction board and being electrically insulated from at least one portion of said conductive layer; and
 - a passage for electrically coupling said at least one portion of said conductive layer with said second portion of said conduction board;

wherein said first electrode of said light emitting diode couples with said connection layer, and said second electrode couples with said at least one portion of said conductive layer.
21. The light emitting device of claim 20, comprising a channel for insulating said connection layer from said at least one portion of said conductive layer.
22. The light emitting device of claim 21, wherein said channel insulates said connection layer from two portions of said conductive layer.
23. The light emitting device of claim 22, wherein said insulation layer comprises an isolation layer and an insulation channel, said isolation layer insulates said

conduction board from said conductive layer, said insulation channel insulates said first portion, said second portion, and a third portion of said conduction board from each other, and said second portion and said third portion respectively correspond to said two portions of said conductive layer.

24. The light emitting device of claim 20, comprising a metal wire for coupling said second electrode of said light emitting diode with said at least one portion of said conductive layer.
25. The light emitting device of claim 20, wherein said connection layer has a reflection surface of silver for reflecting lights emitted from said light emitting diode.
26. The light emitting device of claim 25, wherein said connection layer has a slanted cup-like reflection surface.
27. The light emitting device of claim 20, wherein said connection layer is selected from a group consisting of copper, nickel, silver, gold, and the combination thereof.
28. The light emitting device of claim 20, wherein said passage comprises a hole penetrating through said conductive layer, said insulation layer, and said conduction board, and said hole defines an inner surface coated with a conductive material.
29. A method for assembling a light emitting device, comprising:
 - providing a light emitting diode having a first electrode and a second electrode;
 - providing a substrate sequentially from bottom to top having a conduction board, an insulation layer, and a conductive layer;
 - forming a trench in said conduction board to divide said conduction board into a first portion and a second portion;
 - filling said trench with an insulation material to form an insulation channel for insulating said first portion from said second portion;

forming an opening in said conductive layer and said insulation layer to expose said conduction board;

forming a connection layer in said opening, said connection layer coupling with said first portion of said conduction board and being insulated from at least one portion of said conductive layer;

forming a hole penetrating through said substrate, said hole defining an inner surface;

electroplating said inner surface with a conductive material for coupling said at least one portion of said conductive layer and said second portion of said conduction board;

electrically coupling said first electrode of said light emitting diode with said connection layer; and

electrically coupling said second electrode of said light emitting diode with said at least one portion of said conductive layer.

30. The method of claim 29, comprising a step of forming a channel for insulating said connection layer from said at least one portion of said conductive layer.
31. The method of claim 30, further comprising a step of forming an insulating filling layer to fill said channel.
32. The method of claim 30, wherein said step of forming said channel comprises forming a plurality of channels to divide said conductive layer into a plurality of portions and to insulate said connection layer from at least two portions of said conductive layer.
33. The method of claim 29, wherein said step of forming said trench comprises:
forming a plurality of trenches in said conduction board to divide said conduction board into said first portion, said second portion, and a third portion; and

filling said insulation material in said plurality of trenches to form said insulation channel for insulating said first, said second, and said third portions of said conduction board from each other.

34. The method of claim 29, further comprising forming an adhesive layer on said connection layer to adhere said light emitting diode onto said connection layer.
35. The method of claim 29, comprising forming a metal wire for coupling said second electrode of said light emitting diode with said at least one portion of said conductive layer.